

ABSTRACT

The present invention relates to a three-dimensional image displaying apparatus, or the like, that has a simple structure capable of displaying a high-quality reconstruction image by effectively making use of the focusing function of the observer's eyes. The three-dimensional image displaying apparatus comprises a spatial light modulation element, an illumination optical system, and a lens as a reconstruction image converting optical system. At least one of the bright point interval and initial phase values of the respective bright points constituting a target reconstruction image to be displayed is set such that peaks of the reconstruction light reaching a region, where the observation of reconstruction image obtained through diffraction of a specified order in the spatial light modulation element is permitted, are produced at different plural points on the back focal plane of the lens. As a result, a hologram capable of displaying the target reconstruction image is expressed by the spatial light modulation element. The amplitude or phase of the illumination light that enters the spatial light modulation element expressing the hologram is modulated by each pixel. The modulated light, that is, the reconstruction light is wavefront-converted by the lens and thereby the reconstruction image is formed. The observer, whose eye pupil is disposed close to the aperture portion of the mask, can observe a displayed reconstruction image through the aperture portion and a half mirror.